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ABSTRACT

This document presents data in lists, graphs, and tables on high school graduation rates in Oregon and enrollment in the Oregon State System Higher Education Enrollment (OSSHE). The data presented include figures showing historical and projected data on Oregon Public and Private High School Graduates for 1981-82 through 2011-12; Oregon Births, 1960-61 to 1994-95; comparison of high school graduates projections during 1992-93 through 1995-96; survival rates used in projections made 1992-93 through 1995-96; ratio of public high school graduates to twelfth-grade enrollment, 1988-89 through 1994-95; projections using survival rates for 1991-92 through 2004-05; adjustments to the current projection to 1992-93 survival rates; methods used on Oregon state system enrollment projections; OSSHE enrollment demand estimates before and after Ballot Measure 5, historical and projected Fall base enrollment data for 1989-90 through 2004-05; and projected fall headcount and three-term and full-time enrollment, 1994-95 through 2004-05. (CK)

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ED 399 922

Oregon State System of Higher Education

New Projections of Oregon High School Graduates and OSSHE Enrollment: Issues and Analysis

High School Graduates Projections: Methodology and Environmental Trends

High School Graduates Projections: Current versus Previous Projections

OSSHE Projections: Methodology

OSSHE Enrollment Before and After Ballot Measure 5

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September 1996

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High School Graduates Projections: Methodology and Environmental Trends

- Projection employs a "cohort-survival" method, which tracks the grade-to-grade progression (survival) of Oregon public school students. The projection is developed jointly by OSSHE (Susan Weeks) and the Oregon Department of Education (Bob Jones).

- The method uses actual annual births to determine the number of students in kindergarten and first grade, and it incorporates population migration patterns as reflected in the number of students entering and leaving the public schools.

- Estimates of private high school graduates and home school completers are made based on historical trends. Those estimates do not employ a cohort-survival method.

- The number of children born in Oregon increased sharply during the 1970s and peaked in 1980-81, forming the "echo boom" generation which will become Oregon's high school graduates after the turn of the century. With some fluctuations, the number of births has remained at this higher level during the 1980s and 1990s.

- Oregon population declined during the early 1980s following the deep economic recession of 1980 to 1982. However, in 1988, Oregon's population began to increase rapidly, averaging more than 2% growth per year, until 1993. Much of the increase was a result of inmigration from California. In the last two years, Oregon's population has continued to increase, but the rate of increase has dropped off, as California's economy has improved. These population trends are reflected in public school enrollments.

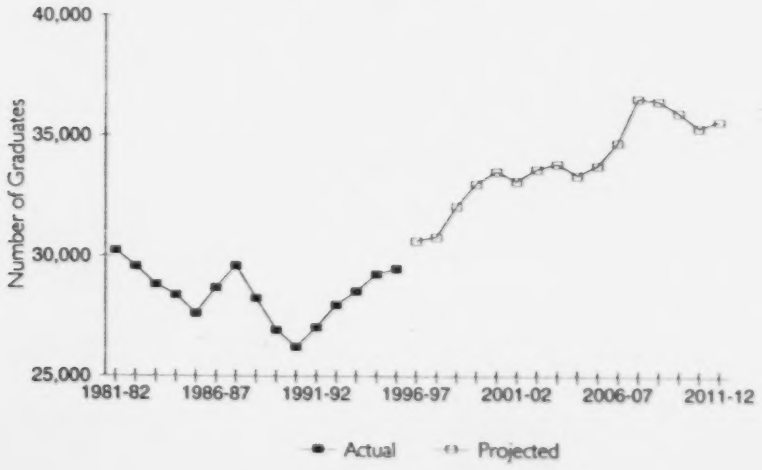
Oregon Public and Private High School Graduates
1981-82 through 2011-12

School Year	Public High School Graduates	Private High School Graduates	Home School Completers*	Total
1981-82	28,780	1,455		30,235
1982-83	28,099	1,466		29,565
1983-84	27,214	1,590		28,804
1984-85	26,870	1,503		28,373
1985-86	26,286	1,312		27,598
1986-87	27,165	1,501		28,666
1987-88	28,058	1,536		29,594
1988-89	26,903	1,339		28,242
1989-90	25,564	1,360		26,924
1990-91	24,702	1,500		26,202
1991-92	25,467	1,546		27,013
1992-93	26,422	1,525		27,947
1993-94	26,534	1,585	400	28,519
1994-95	26,899	1,614	715	29,228
1995-96	26,728	1,902	828	29,458
1996-97 (Projected)	27,438	2,201	990	30,629
1997-98	27,579	2,212	995	30,786
1998-99	28,666	2,408	991	32,065
1999-00	29,539	2,481	974	32,994
2000-01	29,981	2,518	988	33,487
2001-02	29,524	2,592	977	33,093
2002-03	29,967	2,631	991	33,589
2003-04	30,175	2,649	998	33,822
2004-05	29,737	2,611	984	33,331
2005-06	30,105	2,643	996	33,744
2006-07	30,959	2,718	1,024	34,701
2007-08	32,598	2,862	1,078	36,538
2008-09	32,499	2,853	1,075	36,427
2009-10	32,065	2,815	1,061	35,941
2010-11	31,492	2,765	1,042	35,299
2011-12	31,751	2,788	1,050	35,589

* Data on home school enrollment by age has been collected since 1993-94. Home school completers are assumed to be 85% of home schoolers aged 16 to 18.

Source: Projection developed jointly by staff of the Oregon State System of Higher Education and Oregon Department of Education, from data provided by the Oregon Department of Education, June 1996.

Oregon High School Graduates, 1981-82 through 2011-12



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Oregon Births, 1960-61 to 1994-95

Birth Year	Number
1960-61	38,347
1961-62	37,475
1962-63	36,983
1963-64	34,863
1964-65	33,500
1965-66	32,955
1966-67	32,446
1967-68	31,446
1968-69	32,136
1969-70	33,834
1970-71	35,353
1971-72	33,344
1972-73	31,308
1973-74	30,902
1974-75	32,506
1975-76	33,352
1976-77	34,840
1977-78	37,467
1978-79	38,964
1979-80	41,564
1980-81	43,091
1981-82	42,974
1982-83	41,961
1983-84	40,240
1984-85	39,512
1985-86	39,415
1986-87	39,221
1987-88	38,453
1988-89	39,396
1989-90	40,887
1990-91	42,813
1991-92	42,683
1992-93	42,114
1993-94	41,361
1994-95	41,701

Sources: (1) Oregon Center for Health Statistics (years 1960-61 through 1981-82). (2) Oregon Department of Education (years 1982-83 through 1994-95).

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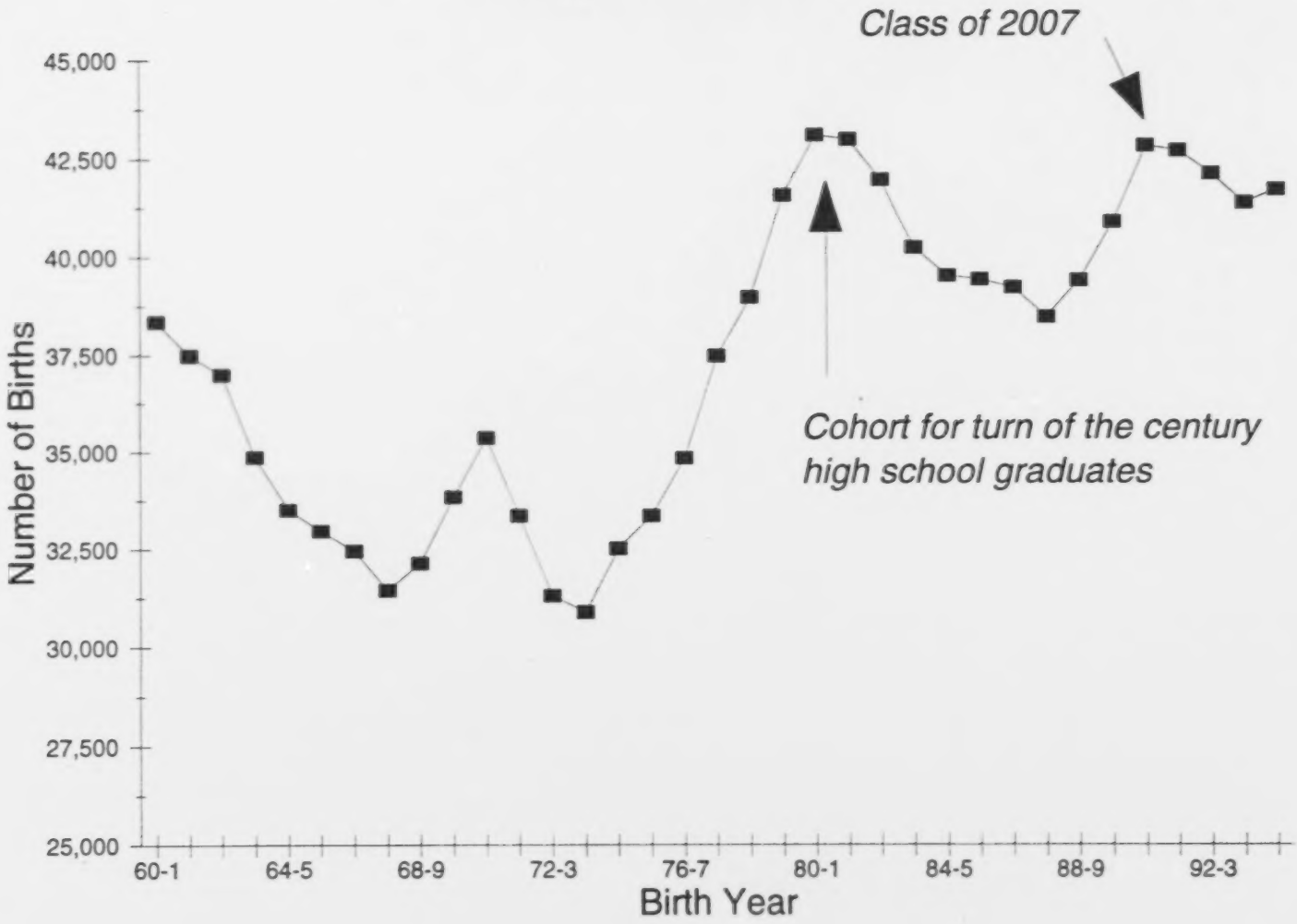
Oregon Births



High School Graduates Projections: Current versus Previous Projections

- The rate of increase projected for the period 1991-92 to 2001-02 was 39.4% in the 1992-93 projection. The projected increase dropped with each subsequent year's projection, to 22.4% in the current projection.

- This declining trend is reflected in the survival rates used in the projections.

- The survival rates also show that tenth, eleventh, and twelfth grades lose students, since students are able to choose to drop out. In contrast, younger-age grades have generally increased in size from year to year, reflecting Oregon's population growth. (However, the rate of increase in the survival rates has declined in each of the past four years.)

- There is a significant drop-off between the beginning of twelfth grade and actual completion of the diploma at the end of the school year. While the 12th-to-graduation rates used in making the projections are slightly higher because they employ a moving two-year average, the actual rates of 12th-to-graduation dropped more dramatically in the last two years. Department of Education analysts speculate that the availability of low-skill jobs has lured more students into the low-end job market before they have completed high school.

- If we had used the 1992-93 survival rates in the 1995-96 projection, we would have projected about 5,000 more students over the current projection by the turn of the century. If we had used just the 1992-93 twelfth-to-graduation rate in the current projection, we would have projected about 700-800 more students in that period. ***Clearly, the major contributing factor in the lower 1995-96 projection is the slowing rate of population growth.***

Comparison of High School Graduates Projections over the Past Four Years

For school year:	1992-93 Projection	1993-94 Projection	1994-95 Projection*	1995-96 Projection
1991-92	***27,013***	***27,013***	***27,013***	***27,013***
1992-93	28,392	***27,947***	***27,947***	***27,947***
1993-94	29,373	29,051	***28,519***	***28,519***
1994-95	30,926	29,998	29,673	***29,228***
1995-96	31,915	30,502	30,154	29,458
1996-97	33,424	31,616	31,376	30,629
1997-98	33,737	32,009	31,768	30,786
1998-99	34,956	33,302	33,044	32,065
1999-00	36,825	35,183	34,399	32,994
2000-01	37,441	36,112	34,870	33,487
2001-02	37,657	36,510	34,645	33,093
2002-03	38,193	37,488	35,081	33,589
2003-04	37,486	37,794	34,919	33,822
2004-05	37,253	37,694	34,594	33,331
Projected change 1991-92 to 2001-02				
Number of graduates	10,644	9,497	7,632	6,080
Percent change	39.4%	35.2%	28.3%	22.5%
Projected change 1994-95 to 2004-05				
Number of graduates	6,327	7,696	4,921	4,103
Percent change	20.5%	25.7%	16.6%	14.0%

* 1994-95 was the first year in which there was a sharp drop in the completion rate of 12th graders. That trend continued in 1995-96.

NOTE: Actual numbers (as opposed to estimates) are displayed in bold italics.

Source: OSSHE Institutional Research Services, projections of Oregon public and private high school graduates, 1992-93 through 1995-96.
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Survival Rates Used in Projections Made 1992-93 through 1995-96*

Grade	Projection Made in: 1992-93**	1993-94**	1994-95	1995-96
K	1.026457	1.025537	1.018671	1.002891
1	1.091205	1.097124	1.089712	1.082583
2	0.995829	0.995986	0.998461	0.997696
3	1.011652	1.010921	1.006095	1.005854
4	1.015322	1.011753	1.007430	1.007122
5	1.015648	1.015339	1.008714	1.007164
6	1.022947	1.015386	1.008005	1.004198
7	1.018006	1.015309	1.008448	1.004100
8	1.009483	1.001014	0.999136	1.001922
9	1.057055	1.063771	1.059718	1.067215
10	**0.979051**	**0.969324**	**0.952695**	**0.948683**
11	**0.945910**	**0.937813**	**0.930009**	**0.919809**
12	**0.955310**	**0.952550**	**0.945853**	**0.925872**
Grad	**0.803453**	**0.800000**	**0.785200**	**0.782300**

* A survival rate is the ratio of a class of students in year 2 to the number in the grade below in year 1. The rates used in these projections are an average of the most recent two years' rates.

** A correction factor was added to the long-term projections made in 1992-93 and 1993-94. The factors were developed by Bob Jones at the Oregon Department of Education as a way to correct for errors arising in previous projections from the use of survival rates built from years in which population in-migration was abnormally low. In the 1993-94 projection, the correction factor was lower and was applied only to years 1998-99 and beyond. Its purpose was to adjust for re-entry of home schoolers into public secondary schools. No correction factors were used in the 1994-95 and 1995-96 projections.

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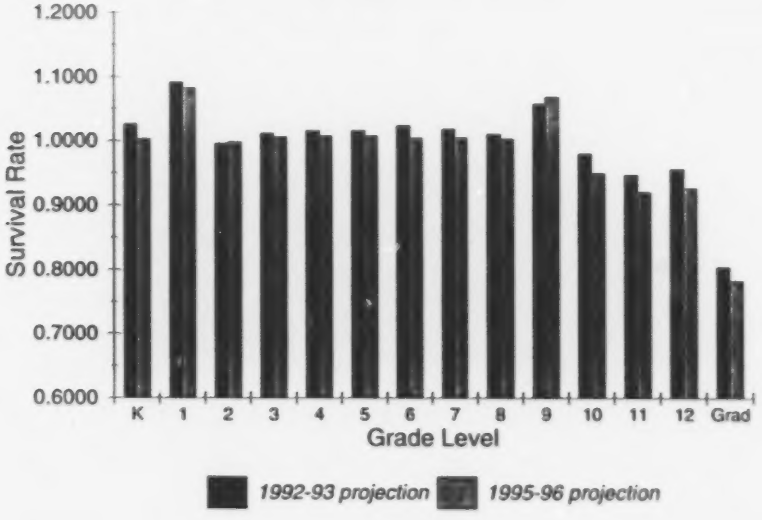
Grade-to-Grade Survival Rates Used: 1992-93 Compared to 1995-96



Ratio of Public High School Graduates to Twelfth-Grade Enrollment, 1988-89 through 1994-95

School Year	Grade 12	Public High School Grads	Grads as % of Grade 12
1988-89	33,309	26,903	**80.77**
1989-90	31,566	25,564	**80.99**
1990-91	30,788	24,702	**80.23**
1991-92	31,840	25,467	**79.98**
1992-93	33,179	26,422	**79.63**
1993-94	34,281	26,534	**77.40**
1994-95	34,617	26,899	**77.70**

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Graduates as a Percent of Grade 12 1988-89 to 1994-95

What if the earlier survival rates were used in the current projection?*

For school year:	Current Projection	Using 92-3 Rate for 12th-to-grad	Difference	Using 92-3 Survival Rates Throughout	Difference
1991-92	27,013	27,013	--	27,013	--
1992-93	27,947	27,947	--	27,947	--
1993-94	28,519	28,519	--	28,519	--
1994-95	29,228	29,228	--	29,228	--
1995-96	29,458	**30,182**	**724**	**30,182**	**724**
1996-97	30,629	**31,458**	**829**	**32,458**	**1,829**
1997-98	30,786	**31,620**	**834**	**33,551**	**2,765**
1998-99	32,065	**32,934**	**869**	**36,064**	**3,999**
1999-00	32,994	**33,887**	**893**	**36,754**	**3,760**
2000-01	33,487	**34,203**	**716**	**37,377**	**3,890**
2001-02	33,093	**33,799**	**706**	**37,447**	**4,354**
2002-03	33,589	**34,307**	**718**	**38,718**	**5,129**
2003-04	33,822	**34,262**	**440**	**38,996**	**5,174**
2004-05	33,331	**33,764**	**433**	**38,742**	**5,411**
Projected change 1991-92 to 2001-02	22.5%	**25.1%**	**2.6%**	**38.6%**	**16.1%**
Projected change 1994-95 to 2004-05	14.0%	**15.5%**	**1.5%**	**32.6%**	**18.5%**

* The alternative numbers were generated by substituting the survival rates used in the 1992-93 projection (which were an average of 1991 and 1992 rates) for those in the current projection (which are an average of 1994 and 1995). The survival rates reflect population changes and K-12 enrollment patterns for the years used in the formula.

Source: OSSHE Institutional Research Services, projections of Oregon public and private high school graduates, 1992-93 and 1995-96.
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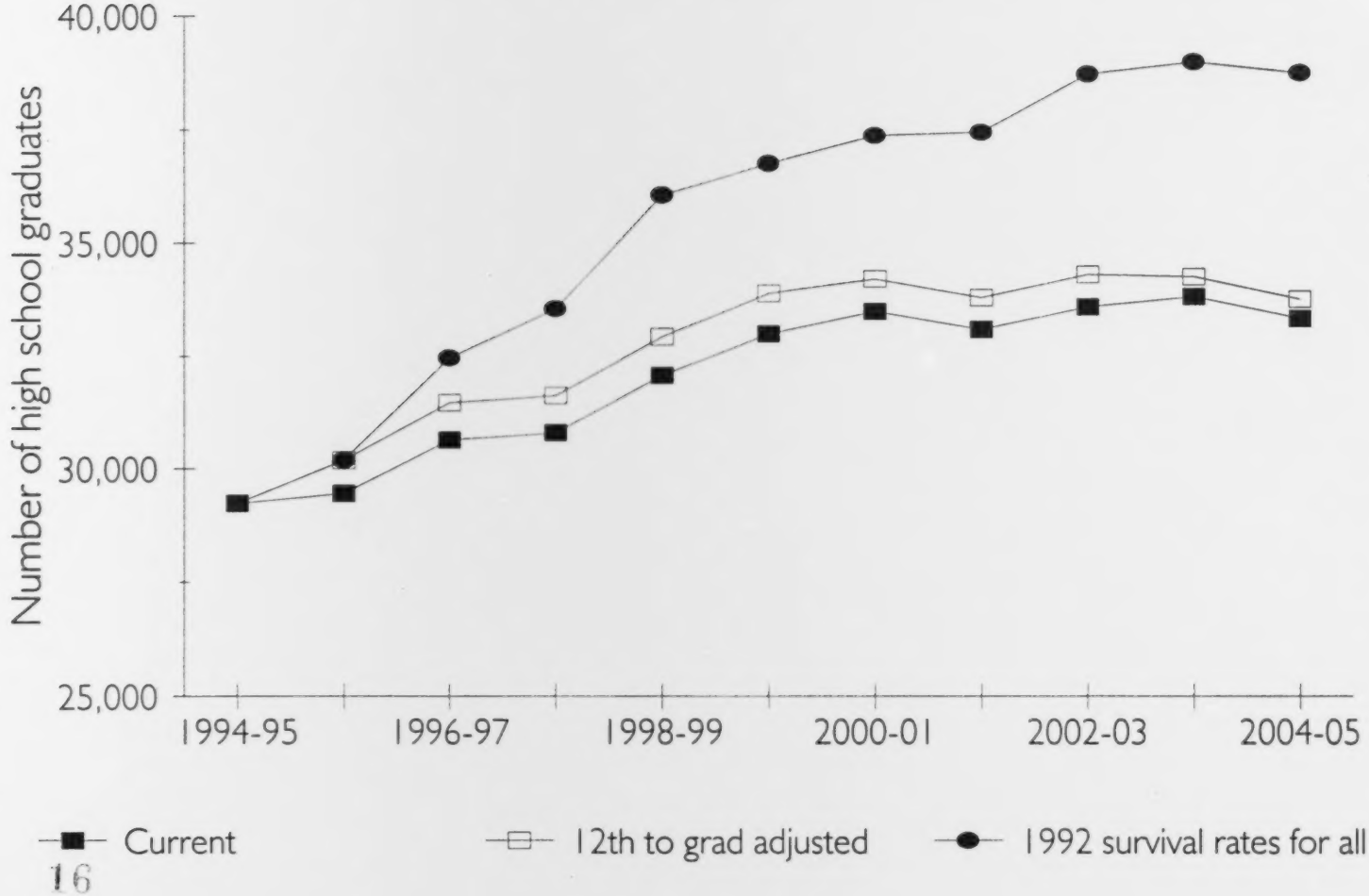
Adjusting the Current Projection to 1992-93 Survival Rates



OSSHE Projections: Methodology

- OSSHE projections employ a cohort-survival method to project admitted undergraduates. Each institution's projection is developed by Susan Weeks, and reviewed and discussed with institution presidents and/or staff.

- The projections use Oregon high school graduates (actual and projected) as the basis for determining resident freshman enrollment.

- The projections incorporate college transfers into the survival rates, similar to the way in which inmigration is incorporated into the high school graduates projections.

- Separate estimates are made for post-bacs, graduate students, and non-admitted students, and then added to the projections of admitted undergraduates. These estimates are based mainly on historical enrollment trends for those groups, but efforts are made to anticipate changes based on external data (such as population trends by age group or federal grant and fellowship activity).

- Extended enrollment is not included in current projections.

Oregon State System Enrollment Projections

Description

The Oregon State System forecasting method incorporates both a causal or pattern model (cohort-survival) and curve-fitting techniques (moving averages and exponential smoothing), and supplements these quantitative approaches with qualitative or subjective judgments.

The cohort-survival component is used to project first-time resident freshmen based on the relationship between Oregon high school graduates and college freshmen. A set of grade-progression ratios drawn from historical institution enrollment figures is used for projections of sophomores, juniors, and seniors.

The curve-fitting techniques rely only on historical State System enrollment data. They are used to calculate projected fall FTE ratios, three-term average discount ratios, and assist in the establishment of future grade-progression (or retention) ratios.

Projections developed through the quantitative procedures described above are further refined by the use of qualitative data and expert judgments of staff from State System institutions and the Oregon Department of Education, and by other planners and economists. These judgments are used to adjust freshman participation rates, projections of nonresident freshmen, and grade-progression or retention ratios in view of such factors as admissions requirements, results of student intention surveys, institution retention programs, financial aid availability, stability of tuition rates, population movement, and local economic trends. Subjective judgment, combined with historical enrollment data, is relied on heavily for projections of graduate and nonadmitted students.

Strengths

1. The method relies on several forecasting techniques (pattern model, curve-fitting, intention surveys, subjective judgment) which give it a great deal of flexibility.

2. The primary technique is the cohort-survival model, a causal or pattern model which relies on the historically reliable relationship between high school graduates and freshman enrollment.

3. The aggregation of enrollment by student level reduces the risk of an overly sensitive response to fluctuations in admissions data.

4. Student categories are defined by fee-paying status rather than geographic origin, thus allowing for more accurate revenue projections.

5. Since the method relies on fall term enrollment data, it can be prepared early enough for January-February budget decisions.

Oregon State System Enrollment Projections (continued)

6. Generally, projections done at the Board's level take into account for each institution's forecast the enrollment environments of other OSSHE institutions.

7. The OSSHE model is understood and accepted by the Office for Educational Policy and Planning, the Executive Department, and the Legislative Fiscal Office. Challenges to its credibility do not occur.

Weaknesses

1. The OSSHE method does not allow for a detailed analysis of students by educational source (new from high school, transfer, continuing, etc.) and geographic origin (such as Oregon counties), thus making it more difficult to fine tune the projections both initially and throughout the admissions cycle.

2. The OSSHE method does not allow projections by academic program. (However, the overall graduate level projections are based on program-driven assumptions.)

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Methods Used in Oregon State System Enrollment Projections

Causal Model (cohort-survival)

- Assumes an identifiable relationship between enrollment and independent factors.
- In OSSHE projections, it is used for projecting Oregon high school graduates, OSSHE resident freshmen, and OSSHE sophomores, juniors, and seniors.

Curve-Fitting (simple averages, moving averages, exponential smoothing)

- Assumes past trends will continue.
- Appropriate to use when too little is known about causal relationships affecting enrollment to permit development of a causal model.
- In OSSHE projections, it is used to project nonresident freshmen, and to calculate fall FTE ratios, three-term average discount ratios, and in part, the grade survival (retention) ratios.

Subjective Judgment

- Can complement other forecasting procedures, especially when objective criteria are lacking.
- Must be used with caution.
- Sources may include expert judgments and Delphi-type surveys.
- In OSSHE projections, subjective judgments are used to adjust freshman participation rates, projections of nonresident freshmen, and grade-progression or retention ratios in view of such factors as admissions requirements, results of student intention surveys, institution retention programs, financial aid availability, stability of tuition rates, population movement, and local economic trends. Subjective judgments are relied on heavily for projections of graduate and non-admitted students.

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OSSHE Enrollment Before and After Ballot Measure 5

- OSSHE base enrollment bounced back from the declines of the early 1980s to a peak of 63,639 (for the seven institutions) in 1988-89, the highest since OSSHE's all-time high of just over 64,000 in fall 1980. With funding not keeping pace with enrollment, OSSHE instituted an enrollment management policy in 1989-90, and enrollment was contained to between 61,000 and 62,000 over the following two years. However, with passage of Ballot Measure 5, the seven-institution enrollment dropped to under 59,000 in fall 1991. Enrollment continued to decrease until fall 1995, when it increased slightly to 58,365.

- The enrollment declines following Ballot Measure 5 altered the patterns established in the late 1980s, and as a result, current estimates of enrollment in the next decade are considerably lower than those made prior to 1991.

  ✓ Current projections show the seven-institution base headcount growing to just under 70,000 by 2004-05 (not including extended enrollment).

  ✓ In comparison, pre-Measure 5 projections indicated an enrollment of over 77,00 by that time, adjusting for the current projection of high school graduates.

- Probably the biggest issue affecting OSSHE's future enrollment is college cost:

  ✓ Sharp tuition increases implemented with Measure 5 affected enrollment.

  ✓ Students are now more dependent on loans than ever before.

  ✓ Many are opting for community college enrollment for the first year or two to cut costs.

  ✓ Some are going out of state or to private schools which can offer better financial packages even though their tuition rates or other costs may be higher.

- The supply of students from California is leveling off, and institutions which had seen rapid growth in nonresident enrollment during the past few years can expect to see stable or declining demand from that source in the next few years.

- There are factors which may serve to moderate the projected declines:

  ✓ If the decrease in 12th-graders completing the diploma is a result of students who would not attend OSSHE anyway, OSSHE's proportion of the remaining pool may actually be higher. However, the difference is not expected to be great.

  ✓ In the future, a larger share of high school graduates may seek a baccalaureate, especially if students respond to market demands for a bachelor's degree as an entry level credential for good jobs.

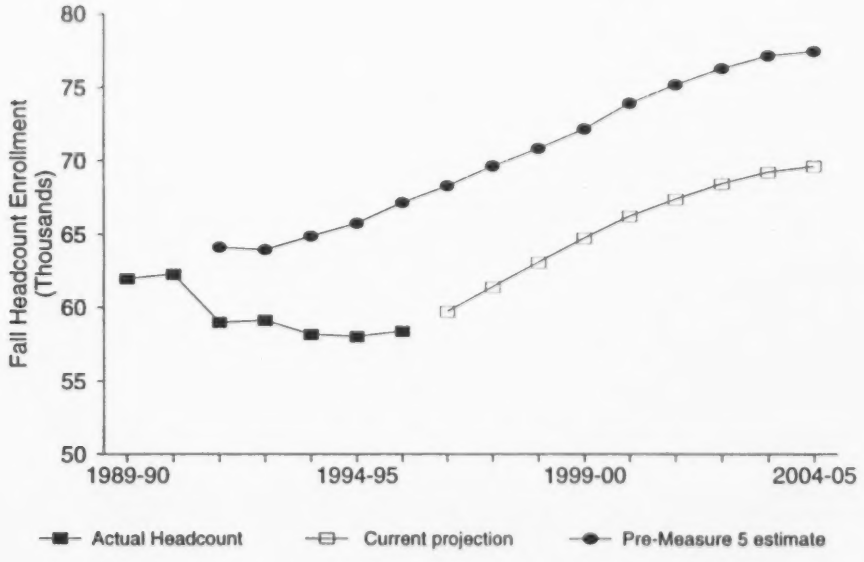
  ✓ If costs can be contained or mitigated with aid, the aspirations reflected in the *Where Have All the Graduates Gone?* survey would have a better chance of being fulfilled.

OSSHE Enrollment Demand Estimates Before and After Ballot Measure 5
Fall Base Enrollment 1989-90 through 2004-05

Academic Year	Actual 7-Institution Headcount	Current Headcount Projection	Pre-Measure 5 Demand Estimate
1989-90	61,950		
1990-91	62,266		
1991-92	58,979		64,101
1992-93	59,137		63,931
1993-94	58,171		64,836
1994-95	58,020		65,729
1995-96	58,365		67,125
1996-97		59,718	68,261
1997-98		61,396	69,598
1998-99		63,048	70,791
1999-00		64,716	72,113
2000-01		66,199	73,863
2001-02		67,344	75,117
2002-03		68,390	76,220
2003-04		69,170	77,052
2004-05		69,567	77,360

NOTE: Pre-Measure 5 demand estimates were developed in 1990-91 and have been updated to reflect the June 1996 projections of Oregon high school graduates.

OSSHE Enrollment Demand Estimates
Before and After Ballot Measure 5



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Projected Fall Headcount and Three-Term FTE Enrollment*
1994-95 through 2004-05

	University of Oregon		Oregon State University		Portland State University		Western Oregon State College	
	Headcount	3-term FTE	Headcount	3-term FTE	Headcount	3-term FTE	Headcount	3-term FTE
1994-95 (actual)	16,680	14,111	14,131	11,847	14,428	8,895	3,871	3,261
1995-96 (est. 3-term)	17,139	14,562	14,161	11,945	14,348	8,865	3,908	3,365
1996-97 (projected)	17,749	15,134	14,377	12,225	14,603	9,085	4,043	3,457
1997-98 (projected)	18,345	15,678	14,906	12,711	14,806	9,220	4,223	3,616
1998-99 (projected)	18,896	16,178	15,529	13,278	14,902	9,284	4,342	3,722
1999-00 (projected)	19,519	16,733	15,775	13,502	15,296	9,566	4,480	3,843
2000-01 (projected)	19,961	17,134	16,136	13,831	15,556	9,762	4,601	3,951
2001-02 (projected)	20,307	17,452	16,408	14,079	15,763	9,920	4,688	4,028
2002-03 (projected)	20,599	17,710	16,659	14,308	15,997	10,096	4,769	4,101
2003-04 (projected)	20,812	17,898	16,844	14,476	16,151	10,208	4,831	4,154
2004-05 (projected)	20,915	17,989	16,931	14,555	16,213	10,253	4,858	4,181

* For all student levels, including graduate, one FTE equals 15 term credit hours.

Source: OSSHE Institutional Research Services, 1995-96 Enrollment Demand Projections.

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